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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/542,222	04/04/2000	Aleksandar Purkovic	2204/A32	5959

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BROMBERG & SUNSTEIN LLP  
125 SUMMER STREET  
BOSTON, MA 02110-1618

EXAMINER
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FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/542,222

Applicant(s)

PURKOVIC ET AL.

Examiner

Fred Ferris

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 April 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,6,7,13,14,19 and 20 is/are rejected.
- 7) ☐ Claim(s) 2-5,8-12 and 15-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. *Claims 1-20 have been presented for examination based on applicant's disclosure filed 4 April 2000. Claims 1, 6, 7, 13, 14, 19, and 20 have been rejected by the examiner. Claims 2-5, 8-12, and 15-18 are objected to.*

### **Drawings**

2. *Applicant's drawings submitted on 4 April 2000 are informal and therefore acceptable for examination purposes only. New formal drawings will be required when the case is allowed.*

### **Information Disclosure Statement**

3. *The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. Specifically, page 4 of the specification lists 13 documents that have not been included on a PTO-1449 IDS form.*

### **Specification**

4. *The attempt to incorporate subject matter into this application by reference to the 13 documents on pages 4-5 of the specification is ineffective because the documents*

*have not been properly included on a PTO-1449 IDS form and are improperly referenced in the specification. Please see MPEP 2163.07(b). Corrective action is required.*

### **Claim Rejections - 35 USC § 101**

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**5. Claims 1-6 and 14-19 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter.**

*Per claims 1-6: The Examiner submits that method claims 1-6, as written, are merely drawn to a mental process for channel shortening, since the language of the claims can be interpreted as meaning the method is carried out by a mental process augmented (calculated) using pencil and paper. (i.e. not a computer process)*

**MPEP 2111 [R-1]** recites the following:

**"2111 [R-1] Claim Interpretation; Broadest Reasonable Interpretation  
CLAIMS MUST BE GIVEN THEIR BROADEST REASONABLE  
INTERPRETATION**

*During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).< Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (Claim 9 was directed to a process of analyzing data generated by mass spectrographic analysis of a gas. The process comprised selecting the data to be analyzed by subjecting the data to a mathematical manipulation. The examiner made rejections under 35 U.S.C. 101 and 102. In the 35 U.S.C. 102 rejection, the examiner explained that the claim was anticipated by a mental process augmented by pencil and paper markings. The court agreed that the claim was not limited to using a machine to*

carry out the process since the claim did not explicitly set forth the machine. The court explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from reading limitations of the specification into a claim, to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification.")"

The Examiner further submits that, in view of the language of the claims, Applicant's have merely claimed a manipulation of abstract ideas by a mental process. Section 2106 [R-2] (Patentable Subject Matter — Computer-Related Inventions) of the MPEP recites the following:

"In practical terms, claims define nonstatutory processes if they:  
– consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or  
– simply manipulate abstract ideas, e.g., a bid (*Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application."

In this case, claims 1-6 are simply drawn to the manipulation of abstract ideas by the mental process of channel shortening.

Per claims 14-17: The Examiner further submits that method claims 14-17, as written, are merely drawn to nonstatutory descriptive material since the claimed "program product" does not appear to impart any functionality. (i.e. not a computer program product embodied on a computer-readable medium)

MPEP 2106 recites the following supporting rational for this reasoning:

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"Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data. Both types of "descriptive material" are nonstatutory when claimed as descriptive material per se. Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."

*In this case, applicants have not claimed program product that is specifically embodied on a computer-readable medium.*

### **Double Patenting**

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**7. Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,674,795.**

*Although the conflicting claims are not identical, they are not patentably distinct from each other because independent claims 1, 7, and 14 of the present invention are*

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*drawn to a channel shortening method, apparatus, and program product, within a communications channel inclusive of an auto-regressive moving average filter, solving parameters (i.e. impulse response for first/second responses (e.g. time mirrored)), and deriving coefficients (i.e. a channel modeling scheme) in obtaining shortened channel impulse response as are claims 1-7 of U.S. 6,674,795.*

*The examiner therefore asserts that it would have been obvious to a skilled artisan to include forming a time-mirrored image from two (first and second) in a channel modeling scheme as part of the parameter solving process of claims 1-7 of U.S. 6,674,795 in order to improve the channel shortening. Dependent claims inherit the defect of the independent claims from which they depend.*

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**8. *Claims 1, 6, 7, 13, 14, 19, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,233,276 issued to Simeon.***

*Regarding independent claims 1, 7, 14, and 20: Simeon teaches a communications system inclusive of coupled first and second communications devices*

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*(CL1-L17-35, Figs. 1-2B) including transmission of training signals (CL5-49-61, Fig. 2C) and determining coefficients (Abstract, CL2-L31-51, Fig. 2B) for a time-domain equalizer (CL3-30-55) and a multi-pass auto-regressive averaging filter (CL4-L53-62) in determining a shortened impulse response (CL4-L9-67, CLCL5-49-61, Fig. 2C). That is, Simeon discloses a channel shortening method, apparatus and program product by determining the shorted channel impulse response by combining the computed shortened channel impulse response from a first and second communication channel. The examiner has interpreted the claimed time-mirrored image process of the claimed invention to be functionally equivalent to the time windowing techniques disclosed by Simeon (CL8-L63-67, CL9-L1-27, Fig. 5).*

Regarding dependent claims 6, 13, and 19: Simeon teaches a communication channel consisting of a ADSL upstream channel (CL1-L41-55, Fig. 1).

### **Allowable Subject Matter**

9. *Claims 2-5, 8-12, and 15-18 are objected to as being dependent upon a rejected base claim; but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In this case, the prior art of record does not disclose the specific arrangement of elements or sequence of steps relating to the claimed pole-zero model, predetermined cyclic prefix length, or first and second approximation by coefficient determination of the claimed invention.*



**Conclusion**

10. *The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.*

*U.S. Patent Application Publications 2002/0106035 issued to Harikumar et al teaches determining a shortened impulse response for .ADSL communications channels*

*"A Simple and Effective Precoding Scheme for Noise Whitening on Intersymbol Interference Channels", Laroia et al, IEEE Transactions of Comm. Vol. 41, No. 10. IEEE 1993 teaches time-domain equalization.*

*Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780. The Official Fax Number is: (703) 872-9306*

*Fred Ferris*, Patent Examiner  
Simulation and Emulation, Art Unit 2128  
U.S. Patent and Trademark Office  
Randolph Building, Room 5D19  
401 Dulany Street  
Alexandria, VA 22313  
Phone: (571-272-3778)  
Fred.Ferris@uspto.gov  
April 28, 2005

*Fred Ferris*  
*4/28/05*